WHAT IS CLAIMED IS:

1. An optical communication system comprising:

an optical fiber (1) having a spherical end surface (11) at at least one end thereof, wherein radiant light emitted from the spherical end surface has a numerical aperture of not larger than 0.35; and

an optical communication module (2A) which has a light receiving element (21) and receives the radiant light emitted from the spherical end surface of the optical fiber, wherein,

when the one end of the optical fiber is inserted in a prescribed portion inside the optical communication module, a light receiving surface of the light receiving element is located at a distance, d, from an apex of the spherical end surface of the optical fiber, and

assuming that a diameter of the optical fiber is D, a radius of curvature, R, of the spherical end surface is r*D, a refractive index of a core of the optical fiber is n, and a refractive index of a substance that exists between the spherical end surface of the optical fiber and the light receiving element is n1, then the distance, d, is:

within a range of $0 < d \leq r*D/(n-n1)$ when a diameter of the light receiving element is not larger than D, and

within a range of $D \leq d \leq r*D/(n-n1)$ when the diameter of the light receiving element is larger than D.

2. An optical communication system comprising:

an optical fiber (1) having a spherical end surface (11) at at least one end thereof, wherein radiant light emitted from the spherical end surface has a numerical aperture of not larger than 0.35; and

an optical communication module (2A) which has a light receiving element (21) and a reception optical system (25) guiding the radiant light emitted from the spherical end surface of the optical fiber to the light receiving element, and receives the radiant light emitted from the spherical end surface of the optical fiber, wherein,

when the one end of the optical fiber is inserted in a prescribed portion inside the optical communication module, a center position of the reception optical system is located at a distance, d, from an apex of the spherical end surface of the optical fiber, and

assuming that a diameter of the optical fiber is D, a radius of curvature, R, of the spherical end surface is r*D, a refractive index of a core of the optical fiber is n, and a refractive index of a substance that exists between the spherical end surface of the optical fiber and

the reception optical system is n1, then the distance, d, is:

within a range of $0 < d \leq r*D/(n-n1)$ when a size of the reception optical system is not larger than D, and

within a range of $D \leq d \leq r*D/(n-n1)$ when the size of the reception optical system is larger than D.

3. An optical communication system comprising:

an optical fiber (1) having a spherical end surface (11) at at least one end thereof, wherein radiant light emitted from the spherical end surface has a numerical aperture of 0.4 - 0.6 inclusive; and

an optical communication module (2A) which has a light receiving element (21) and receives the radiant light emitted from the spherical end surface of the optical fiber, wherein,

when the one end of the optical fiber is inserted in a prescribed portion inside the optical communication module, a light receiving surface of the light receiving element is located at a distance, d, from an apex of the spherical end surface of the optical fiber, and

assuming that a diameter of the optical fiber is D, then the distance, d, is:

within a range of $0 < d < 2D$ when a diameter of the light receiving element is not larger than D, and

within a range of $0.5D < d < 2D$ when the diameter of the light receiving element is larger than D.

4. An optical communication system comprising:

an optical fiber (1) having a spherical end surface (11) at at least one end thereof, wherein radiant light emitted from the spherical end surface has a numerical aperture of 0.4 - 0.6 inclusive; and

an optical communication module (2A) which has a light receiving element (21) and a reception optical system (25) guiding the radiant light emitted from the spherical end surface of the optical fiber to the light receiving element, and receives the radiant light emitted from the spherical end surface of the optical fiber, wherein,

when the one end of the optical fiber is inserted in a prescribed portion inside the optical communication module, a center position of the reception optical system is located at a distance, d, from an apex of the spherical end surface of the optical fiber, and

assuming that a diameter of the optical fiber is D, then the distance, d, is:

within a range of $0 < d < 2D$ when a size of the reception optical system is not larger than D, and

within a range of $0.5D < d < 2D$ when the size of the reception optical system is larger than D.

5. The optical communication system as claimed in any one of claims 1 through 4, wherein

the optical fiber (1) is a plastic optical fiber.

6. The optical communication system as claimed in claim 1 or 2, wherein

the substance is air whose refractive index n1 is one.

7. The optical communication system as claimed in any one of claims 1 through 4, wherein

the diameter, D, of the optical fiber (1) is 1 mm, and the light receiving element is a photodiode that has a diameter of not larger than 0.5 mm.

8. The optical communication system as claimed in claim 3 or 4, wherein

the diameter, D, of the optical fiber (1) is 1 mm, and the reception optical system has a size of not larger than 0.5 mm.

9. The optical communication system as claimed in any one of claims 1 through 4, wherein

the optical communication module (2A) further comprises, of a light emitting element (22) and a transmission optical system (26), at least the light emitting element such that the optical communication module (2A) is able to transmit and receive a signal light via the optical fiber to and from a counterpart optical communication module (2B) in a single-core two-way communication scheme.